

ABSTRACT OF THE DISCLSOURE

A reflection-transmission double type liquid-crystal display device has a transmission type liquid-crystal display panel including a liquid-crystal cell, at least one illuminator disposed on at least one side surface of the liquid-crystal display panel, an optical path changing sheet which has a refractive index exhibiting a refractive index difference of not higher than 0.15 from a refractive index of a nearest liquid-crystal cell substrate and is bonded onto a back side of the liquid-crystal display panel through an adhesive layer having a refractive index exhibiting a refractive index difference of not higher than 0.20 from the refractive index of the nearest liquid-crystal cell substrate, and a reflection layer disposed on a back side of the optical path changing sheet.

The optical path changing sheet includes optical path changing slopes and flat surfaces. Each of the optical path changing slopes faces the illuminator at an inclination angle in a range of from 30 to 48 degrees with respect to a plane of the optical path changing sheet and being provided for reflecting incident light from the illuminator toward the visual side of the liquid-crystal display panel. Each of the flat surfaces is inclined at an inclination angle of not larger than 10 degrees with respect to the sheet plane, and a projected area of the flat surfaces on the sheet plane is not smaller than 10 times as large as a projected area of the optical path changing slopes.